NEW IN SIGNAL

NEWSLETTER

Stay on track with railway signalling and telecommunications professionals!

As a manufacturer of safety-relevant products for railway infrastructure, **PINTSCH** product portfolio mostly focuses on providing different systems, components and services for national and international railway traffic.

PINTSCH system solutions are tailor-made, individually dimensioned and precisely matched to the respective requirements.
The target is to implement operational requirements in safety-relevant technology. Key competencies of PINTSCH are allocated in the field of interlocking systems, including related subsystems, locally operated points, level crossing systems, point heating, and haulage systems.

PINTSCH has had a broad experience of requirements and operational efforts in cooperation with different clients for many years. Founded in 1843, the Company and Brand have existed for more than 175 years now; constant changes led to its actual capabilities and products, which we highlight in this newsletter.

PINTSCH
Safety for Rail

Product & Service Portfolio

PINMOVIO - Interlocking Technology

PINTSCH owns specialized PINMOVIO interlocking technology for shunting and ancillary areas, which can be scaled from a single set of points to a complex train formation yard (ZBA), depending on requirements. The electronic interlocking system is used in areas where signal-controlled shunting and train movements are preferable to free shunting using LOP, due to operational requirements. The points are set electrically by remote-controlled point machines. PINCLIRIO Axle counters ensure that points and track sections are safely signalled as clear. PINLUXON signals with LED multi-colored optics signal safe routes to the shunting personnel and drivers. The system is run via modern screen-based operating stations, and functions for automated train routing can also be implemented as required.

PINMOVIO Point Machine

The point machine PINMOVIO WA 550 contains an internal mechanical locking system (patented). Standard external high-maintenance locking systems such as clamp locks become dispensable.

Due to its minimal height, the point machine PINMOVIO WA 550 is installable between the rails without work on the existing track system.

The points can be installed on a gap-free ballast ground. Therefore, we ensure proper track conditions and reduce the strain on the points. Long-term operations at the sites of well-known railway companies give proof of the high reliability.

The point machine PINMOVIO WA 550, with its robust and compact construction, perfectly meets the requirements for the rough conditions of railroad traffic.

PINLUXON Signals

PINTSCH sets standards in multicolor LED technology by means of modular design and innovative optical systems. The multicolor light point PINLUXON 550 meets the highest requirements for recognition and visibility, safety, and energy efficiency. The LED auxiliary signal indicator (developed according to CENELEC EN5012X, SIL 4) gained EBA-type approval and DB series approval in October 2016.

Actually, PINTSCH can offer these types of signals and single inserts, adaptable to different signal screens:

- PINLUXON 550 (MC-LP136 & MC-LP70) – Multicolor signal unit
- PINLUXON 550 (LED-ZA) – LED-Additional Indicator
- PINLUXON 550 (TLs02 DB-Application) – Position Light Signal
- PINLUXON 450 (SP200 LED) – Level Crossing Road Signal
- PINLUXON 350 (P145 LED) – Level Crossing Driver Indicator Signal
- PINLUXON 350 (HKR-ZA) – Auxiliary signal indicator (halogen technology)
- PINLUXON 350 (EZA) – Auxiliary signal indicator
- PINLUXON 250 (WLM) – Point position indicator

MORE ABOUT PINTSCH

Our next guest is **Richard Ebourne**, a signaling consultant from RE-SIGNALLING Ltd and a railway signaling expert.

Richard, thank you for joining us today. You have great experience in major railway implementation projects, including CBI and relay interlocking systems, ETCS, ATP, CBTC and level crossings. Please introduce yourself and briefly overview your current work area.

Hello, I have been involved in engineering for over 28 years. During this time, I have worked in many different engineering industries and disciplines. For the last 22 years, I have worked within the railway industry. Currently, my work is associated with the technical delivery of UK signalling projects. In the majority, these projects are categorized as major infrastructure projects.

These implementation projects are normally associated with large re-modelling areas of railway or significant areas of re-signalling. With both, normally a new modern signalling system is provided. These type of projects normally include several new control and command signalling systems, but many of the projects also take the opportunity to upgrade level crossings, power systems, telecommunication systems, RCM, and electrification etc.

In your experience, what are the critical challenges when implementing complex railway signaling systems like CBI, relay interlocking, ETCS, ATP, CBTC, and level crossings? How do you navigate these challenges to ensure successful project implementation?

There are several factors that can impact the level of the challenge during the delivery of a project. The project scope and the project engineering requirements will always cause challenges and affect the delivery of the project if they are not specified compliantly and with clarity. These items should be formally agreed as earlier as possible while still ensuring sufficient detail is provided.

The project timescales & resources always have a significant impact on the level of the challenge. It is beneficial to start with realistic aspirations as reprogramming can cause further delays to project delivery.

When considering technical aspects, any new signalling concepts or bespoke / novel arrangements that need to be developed by the project will always require a lot of attention. The earlier in the project that areas of development are analyzed, appropriately specified and agreed/approved should help limit exposure to further difficulties later in the project.

Another significant challenge can be the introduction of a new product or technology/system. Again, this will require detailed analysis and a solution strategy that is agreed by the experts in the specific fields.

Could you describe a specific railway signaling project(s) you have been involved in where innovative approaches or solutions were used to overcome a significant technical hurdle or enhance overall system performance?

The Crossrail (London) project was a complex implementation project; throughout the complete project area, there were many difficult interfaces of differing types. My involvement was associated with the transition between color light signalling & CBTC signaling.

The interface boundary differed from other conventional project interfaces as there were two different infrastructure owners. Here, the two infrastructure owners specified different types of signaling systems, including train protection systems, from two technology providers. To manage the seamless transition between the signalling systems, a significant amount of overlayed signaling controls/equipment was required across the two infrastructures. The significant overlay of controls and equipment ensured that the appropriate commands/indications were delivered when required to ensure that an efficient and safe transition was possible when transitioning between the two infrastructures.

Given your experience with various signaling technologies, how do you prioritize upgrading existing systems and integrating new signaling technology to ensure a seamless and safe railway operation?

Normally, during the early development phase of many projects, an asset assessment of the signalling equipment is completed. This can invariably highlight signalling equipment within the same project area that have significant differences in the condition of the assets. Thus, some assets may have many usable services years remaining unlike other assets that do not. When determining if additional new signalling equipment should be provided other than the equipment that is nearing the end of its service life is a balancing act. The decision to upgrade existing equipment does depend on cost vs benefits/risk. In some instances it can be simpler, cost effective and with a reduced risk level to renew more equipment.

The strategy to renew more equipment is more likely to be used where difficult and complex arrangements & interfaces can be avoided. This type of issues can occur where two signalling systems interface in a complex area, the benefits of moving the boundary of the interfacing systems can have significant benefits.

With modern signalling systems an advantage is that the new signalling system should be tested off-site prior to commissioning. When existing signalling systems are integrated with new signalling systems the risk level normally increases as there is a reduced level of off-site testing. Thus, it can be simpler to upgrade more of the signalling area to the same level of compliance while in the process making design, installation, test activities simpler.

With the advancements in technology, how do you see the future of railway signaling evolving, particularly in terms of enhancing safety, efficiency, and integrating different signaling systems?

When older technologies such as relay systems/mechanical systems are decommissioned, and Electronic systems are commissioned, there are apparent RAM, operational, and safety benefits. The railway should also run more efficiently if / where other traffic management systems are provided.

Safety for staff working on or near the railway line should improve with modern solutions associated with staff protection. If the track and wayside equipment can be reduced/replaced with more reliable equipment, the number of hours spent on or near a railway should reduce, and safety performance should improve. Nothing that further remote condition monitoring should provide earlier indications of potential failures, which will provide valuable information when maintaining and running the railway.

One question associated with introducing new technology is what is the expected service life of all the equipment within the system architecture, and how easy and costly will it be to re-platform onto other hardware /technologies when life expired? This may differ significantly from upgrading an old relay or mechanical system that has been in service for 50+ years.

There still seems to be scope for further and better products when interfacing signalling interlocking products from different suppliers without using relays and without compromising the security of either system.

The cost justification of upgrading some lines / regions may be difficult where funding / revenues are low. Devising and providing suitable low cost signalling systems while maintaining the required safety levels will likely provide a challenge in the current economic climate.

Richard, thank you for sharing your insights and thoughts on these issues. It's been a pleasure talking with you.

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See you in two weeks again!